Kennedy/Jenks Consultants

Engineers & Scientists

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6 June 2016

Joe Wallace
U.S. Environmental Protection Agency
1200 Sixth Avenue (ECL-111)
Seattle, WA 98101

Subject: 2015 Annual Progress Report
K/J 006014.01 and 966124.34

Dear Mr. Wallace:

Enclosed is the 2015 Annual Progress Report for the South Tacoma Field site. Inspection and sampling activities were conducted in December 2015 and January 2016 to evaluate current conditions at the site. For reference, we have attached three figures from the Operation and Maintenance (O&M) Plan for the site to help orient you on the location of annual O&M activities addressed in this report. **We request consideration in deleting the Amsted portion of the site from the National Priorities List since contaminants have not been detected in groundwater above cleanup levels over the past ten years.**

Please call us if you have questions regarding the information contained herein.

Very truly yours,

KENNEDY/JENKS CONSULTANTS

Nathan Graves
Vice President

Steve Misner
Project Manager

Enclosures

cc: Ed Brosius, Amsted Industries
Scott MacDonald, BNSF
Dava Kaitala, BNSF
Doug Rhine, R.W. Rhine

Progress Report

SITE NAME: South Tacoma Field, Tacoma, Washington

PREPARED BY: Kennedy/Jenks Consultants

REPRESENTING: Amsted Industries and BNSF Railway Company

DATE: Reporting Year 2015

REPORTING PERIOD:

a. Progress made this reporting period, including problems encountered and recommendations:

Kennedy/Jenks Consultants (Kennedy/Jenks) completed one groundwater monitoring event in January 2016 at the BNSF Railway Company (BNSF) and former Amsted Industries sites. Site figures are provided in Attachment A. Analytical results are summarized in Table 1, provided in Attachment B. None of the groundwater samples collected during the January 2016 sampling event from the South Tacoma Field (STF) site-wide monitoring wells contained lead at concentrations that exceed the Environmental Protection Agency Maximum Contaminant Level (MCL) of 15 micrograms per liter (µg/L). This represents a general decrease in lead concentrations over prior years and none of the concentrations exceeded site cleanup level for lead.

Monitoring well STM-1A was installed in late 2015 to replace well STM-1, which was damaged in 2002. Monitoring well STM-1A was sampled for the first time during the January 2016 sampling event. Lead was detected in groundwater samples collected from wells STM-3A, STM-4A, CBS-7A and CBS-10A at concentrations ranging from 2.26 µg/L (monitoring well CBS-10A) to 6.78 µg/L (monitoring well CBS-7A). At the Amsted site, lead was not detected in groundwater samples collected from any of the Amsted site monitoring wells during the January 2016 sampling event and all sampled contaminants have been below site cleanup levels for **ten consecutive years**.

Groundwater elevations during the January 2016 sampling event were lower than in December 2014. Chemical concentrations detected in all of the groundwater samples collected in January 2016 were considerably lower than in recent prior years, consistent with the observed trend of higher chemical concentrations during years with higher groundwater elevations. The suspected reason for this is that residual impacted soil in the vadose zone is exposed to saturation during periods of high groundwater, potentially leaching residual contamination from the vadose zone. Groundwater results will continue to be monitored following future sampling events to assess continuing trends.

Kennedy/Jenks completed one groundwater monitoring event in January 2016 at Pioneer Builders Supply (Pioneer, Attachment A). Analytical results are summarized in Table 2, which is provided in Attachment B. Groundwater elevations and chemical concentrations were generally lower compared to recent years at the Pioneer site, although slightly higher,

in general compared to 2014. One or more chemicals of concern were detected in groundwater samples collected from monitoring wells NMW-1A, NMW-9A (diesel-range hydrocarbons only) and NMW-10A, typical of prior years. All of the chemicals were detected at concentrations below site cleanup levels, except for 1,4-dichlorobenzene. The cleanup level for 1,4-dichlorobenzene was established based Washington's Model Toxics Control Act (MTCA), Method B, which is subject to change based on revised information. A review of this chemical in Ecology's cleanup database revealed that the MTCA Method B cleanup level has been revised from 1.82 µg/L to 8.1 µg/L. Therefore, the concentration detected in the sample collected from monitoring well NMW-1A during the most recent sampling is below current MTCA cleanup levels.

Kennedy/Jenks completed one site inspection (December 2015) in accordance with Operations & Maintenance (O&M) Plan requirements. The inspection report is provided in Attachment C.

In accordance with a November 23, 2015 work plan that was approved by EPA on November 27, 2015, BNSF monitoring well STM-1A1 was installed to replace damaged monitoring well STM-1A and the damaged well was abandoned in accordance with Washington Administrative Code 173-160-460. In addition, one of the Pioneer wells (NMW-8A) was previously damaged and was replaced with a new monitoring well (NMW-8A1) located approximately 15 feet southwest of NMW-8A, within the fenced area of the Pioneer facility. Closure of NMW-8A is anticipated during 2016 if NMW-8A1 is confirmed to be at the same relative elevation as MNW-8A. A summary memo describing well repair/replacement is presented in Attachment D.

b. Anticipated problem areas and recommended solutions, including technical and scheduling information:

Well security and fencing conditions will be monitored during annual inspections. Ponding in maintenance grids will be monitored during annual inspections to assess cap erosion. Public access to non-fenced areas has been limited by new fencing. Caps are intact, limiting exposure.

c. Problems resolved including results obtained relating to previously identified problem areas.

None

d. Deliverables submitted, including dates of completion, deliverable anticipated to be submitted with next report, and reasons due dates for any future deliverables may need to be revised. Delays should be fully explained:

2014 annual report submitted in May 2015.

e. Upcoming event/activities planned, including field surveys, meetings, etc., and all major tasks to be performed within the next reporting period:

- Conduct annual inspection.
- Close Pioneer well NMW-8A, if possible.
- Perform annual groundwater monitoring.

- Repair fencing fabric where damaged and install gates to better access former Amsted site well and NMW-17A from BNSF property.
- Survey monitoring wells and locations of missing grid markers; replace grid markers as necessary.
- Prepare memo on fence repair, survey, and grid marker replacement for inclusion in 2016 annual report.
- Replace signs at former Amsted property, if necessary.

f. Key staffing changes, including consultant, contractor, or subcontractor personnel:

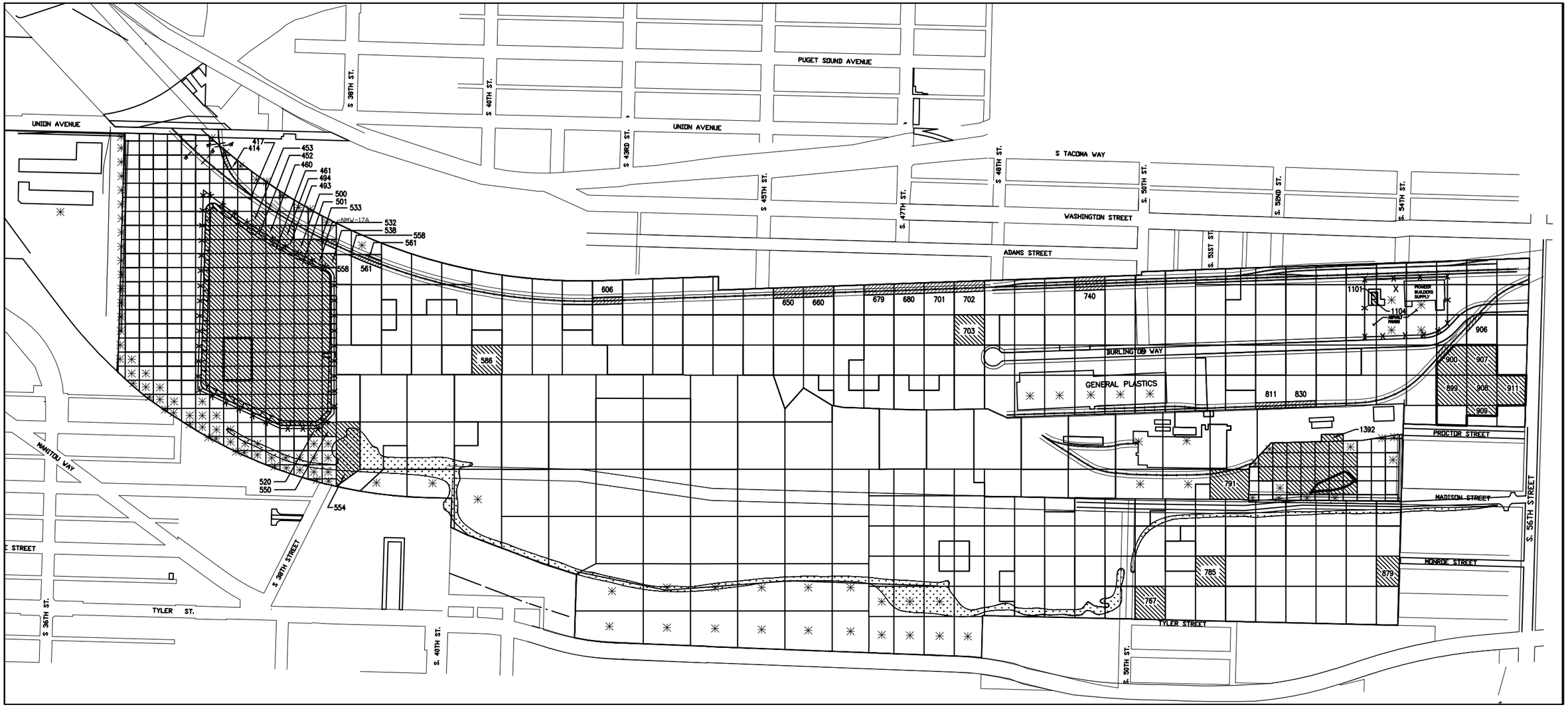
None.

g. Reports, including identification of daily reports, inspection reports, laboratory/monitoring data, etc., that are available for review if requested by EPA:

- The Groundwater Monitoring Summary Tables are provided in Attachment B. The original laboratory analytical reports are available at Kennedy/Jenks Consultants' office.
- The annual inspection report is provided in Attachment C.
- Groundwater well installation and closure details are provided in Attachment D.

Attachment A

Site Figures



LEGEND

- GRID NOT SAMPLED DURING RI OR RA
- 538 — GRID ABOVE CAPPING LEVELS; COVERED WITH AT LEAST 1 FOOT OF SOIL OR CAPPED WITH ASPHALT; MAINTENANCE REQUIRED
- 606 — GRID POTENTIALLY ABOVE CAPPING LEVELS; NOT REMEDIATED; SAFETY PRECAUTIONS REQUIRED

- DRAINAGE CHANNEL
- RAILROAD TRACKS
- FENCE
- BURIED GEOTEXTILE; IDENTIFIES LIMIT OF TREATED OR CONTAMINATED SUBSURFACE SOIL

CAPPING LEVELS

ARSENIC	200 mg/kg
LEAD	1,000 mg/kg
cPAHs (TOTAL)	20 mg/kg
PCBs (TOTAL)	10 mg/kg

DISCLAIMER

NO WARRANTY IS ASSOCIATED WITH THE ACCURACY OF CHEMICAL DATA DEPICTED ON THIS MAP. CHEMICAL CONCENTRATIONS COULD BE HIGHER OR LOWER THAN SHOWN. PEOPLE WHO HANDLE SOIL AT THE SITE (I.E., CONTRACTORS) SHOULD TAKE CONSERVATIVE PRECAUTIONS TO PROTECT AGAINST EXPOSURE. CONTACT AN ENVIRONMENTAL PROFESSIONAL FOR ASSISTANCE.

NOTE:

1) NO SAMPLING/REMEDIATION CONDUCTED WITHIN STRUCTURES, BURLINGTON WAY RIGHT OF WAY, OR PAVED AREAS; EXCEPT AS NOTED.

N

0 250 500

APPROXIMATE SCALE IN FEET

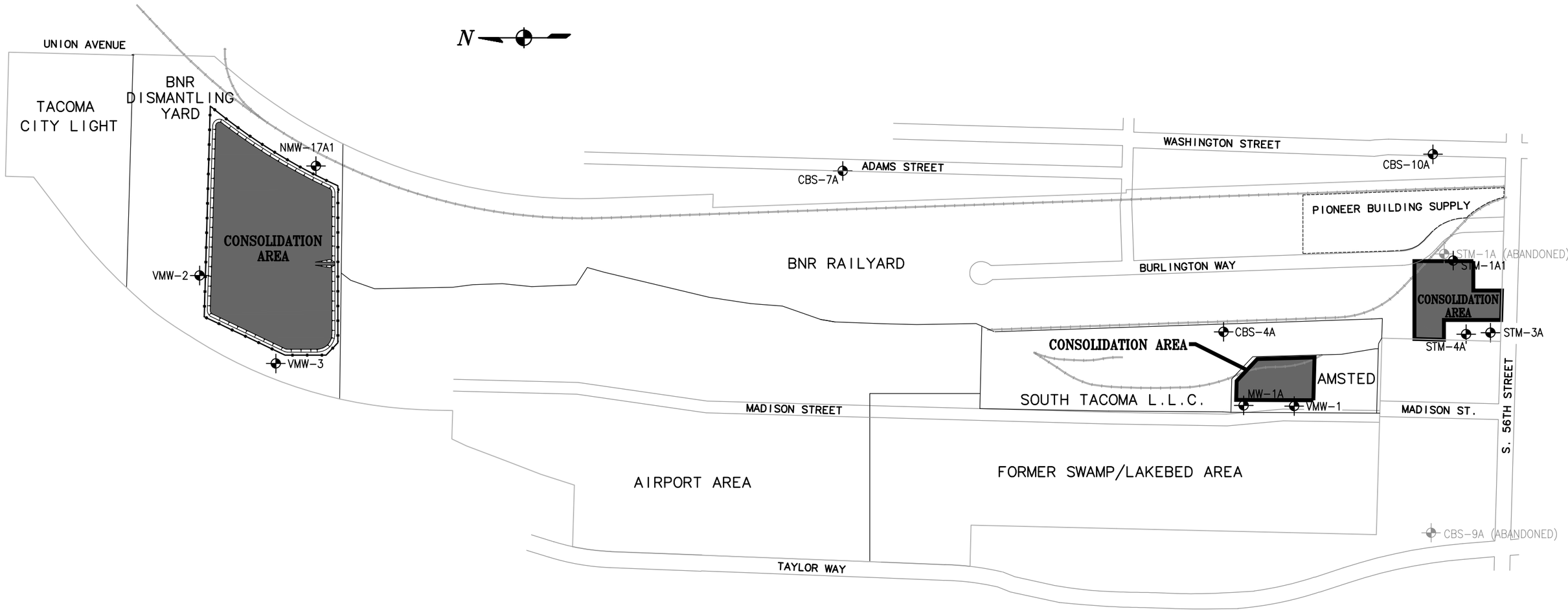
Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

MAINTENANCE GRIDS

006015.05/P9SK004

FIGURE 1



LEGEND

NMW-1A — EXISTING MONITORING WELL LOCATION

STM-1A — ABANDONED MONITORING WELL LOCATION

NOTE: MONITORING WELLS CBS-41, MW-1A, AND VMW-1 ARE MONITORED AND SAMPLED FOR AMSTED INDUSTRIES. ALL OTHER MONITORING WELLS ARE MONITORED AND SAMPLED FOR BNSF.

0 250 500

APPROXIMATE SCALE IN FEET

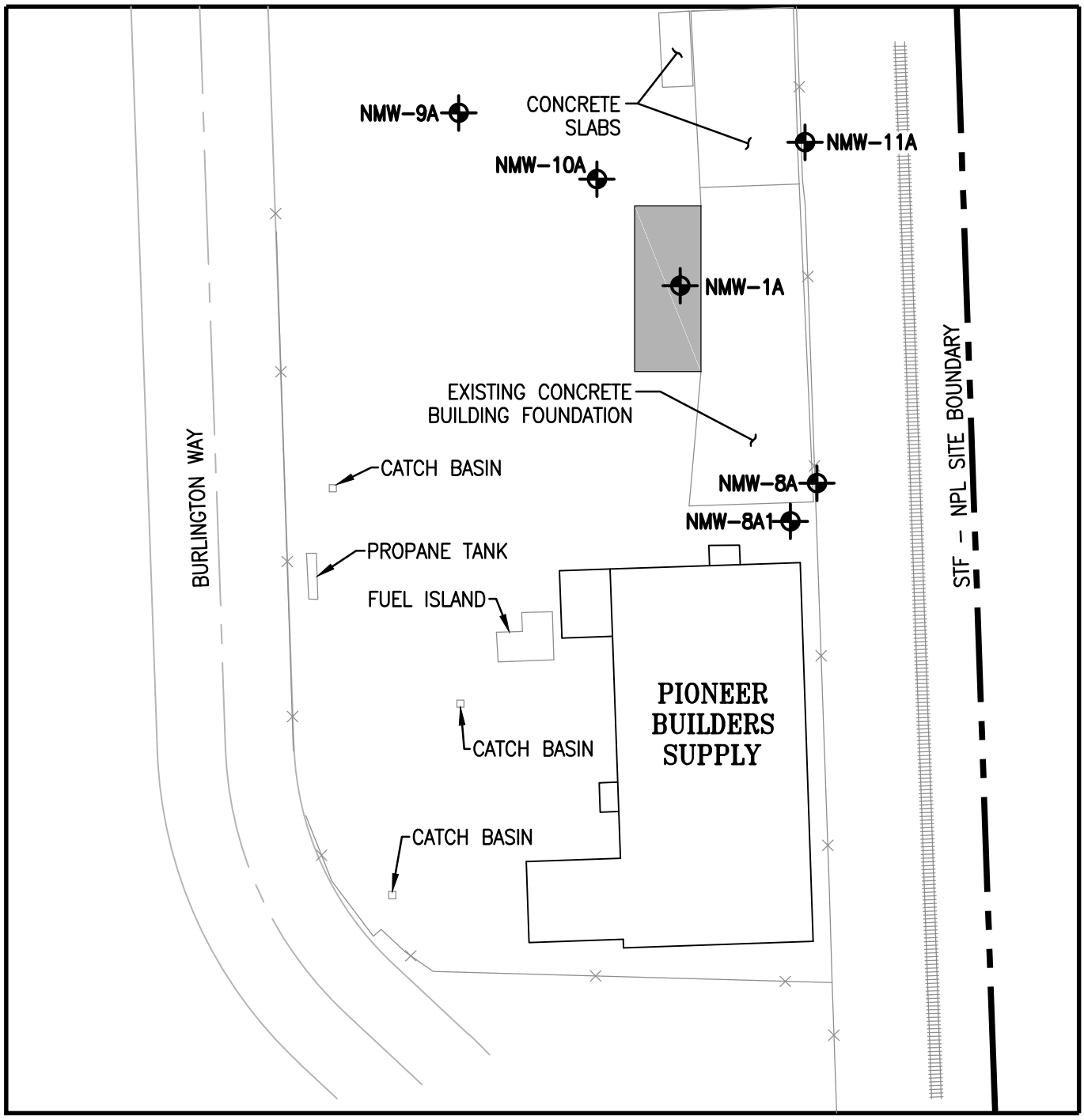
Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

MONITORING WELL LOCATIONS

006015.05/P9SK003

FIGURE 2



LEGEND

- NMW-1A — MONITORING WELL
- EXISTING RAILROAD TRACKS
- EXISTING FENCE
- UNDERGROUND TANK EXCAVATION

0 40 80

APPROXIMATE SCALE IN FEET

N

Kennedy/Jenks Consultants

SOUTH TACOMA FIELD
TACOMA, WA

PIONEER BUILDERS SUPPLY
MONITORING WELL LOCATIONS

966124.53/P9SK002

FIGURE 3

NOTE:

1) ALL LOCATIONS ARE APPROXIMATE.

Attachment B

Groundwater Monitoring Summary Tables

TABLE 1

GROUNDWATER ANALYTICAL RESULTS
POST REMEDIATION SAMPLING EVENT – JANUARY 2016
South Tacoma Field Site

Analyte	Amsted Wells			STF Wells			MCLs[b]
	MW-1A	CBS-4A	VMW-1	STM-1A1	STM-3A	STM-4A / STM-100[a]	
Polynuclear Aromatic Hydrocarbons (µg/L)[c]	ND[d]	ND[d]	ND[d]	NA[e]	NA	NA	–[f]
Total lead (µg/L)[g]	<5.00	<5.00	<5.00	<2.00	**5.73**	**5.95** / **5.08**	15 [i]
Total Petroleum Hydrocarbons as diesel (mg/L)[j]	<100	<100	<100	NA	NA	NA	–
Total Petroleum Hydrocarbons as oil (mg/L)[j]	<250	<250	<250	NA	NA	NA	–

Analyte	STF Wells, cont'd					MCLs[b]
	CBS-7A	CBS-10A	VMW-2	VMW-3	NMW-17A	
Polynuclear Aromatic Hydrocarbons (µg/L)[c]	NA	NA	NA	NA	NA	–
Total lead (µg/L)[g]	**6.78**	**2.26**	<2.00	<2.00	<2.00	15[i]
Total Petroleum Hydrocarbons as diesel (mg/L)[j]	NA	NA	NA	NA	NA	–
Total Petroleum Hydrocarbons as oil (mg/L)[j]	NA	NA	NA	NA	NA	–

Notes:

(a) Sample STM-100 is a duplicate sample collected from monitoring well STM-4A.
(b) Maximum contaminant levels (MCLs) are provided in the Drinking Water Regulations under the Safe Drinking Act, as amended.
(c) Samples were analyzed for polynuclear aromatic hydrocarbons (PAHs) using EPA Method 8270c with select ion monitoring (SIM).
(d) "ND" = No PAH analytes were detected at concentrations above the laboratory reporting limits (0.25 µg/l for naphthalenes; 0.050 µg/l for all other PAH analytes).
(e) "NA" = Not analyzed.
(f) "–" Denotes that a MCL is not available.
(g) Groundwater samples were analyzed for total lead using EPA Method 6020.
(h) "<" denotes that the analyte was not detected at the indicated laboratory reporting limit.
(i) No MCL is currently available; the value represents an action level.
(j) Groundwater samples were analyzed for total petroleum hydrocarbons as diesel (including oil) using NWTPH-Dx.

mg/l = milligrams per liter
µg/L = micrograms per liter

Concentrations above the laboratory reporting limits are shown in bold

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
ANNUAL SAMPLING EVENT – JANUARY 2016
Pioneer Builders Supply

Chemical	NMW-1A/ NMW-100[a]	NMW-8A	NMW-8A1	NMW-9A	NMW-10A	NMW-11A	MCLs[b]	Cleanup Levels[c]
Volatile Organic Compounds (VOCs) (µg/L)[d]								
Benzene	<1.0[e]/ <1.0	<1.0	<1.0	<1.0	**2.01**	<1.0	5.0	5.0
Toluene	<5.0 / <5.0	<5.0	<5.0	<5.0	<5	<5.0	1,000	1,000
Ethylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	**7.75**	<1.0	700	700
Total Xylenes	<3.0 / <3.0	<3.0	<3.0	<3.0	**9.02**	<3.0	10,000	10,000
n-Butylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1	<1.0	–[f]	–
sec-Butylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	**1.49**	<1.0	–	–
tert-Butylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	–
p-Isopropyltoluene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	–
1,2-Dichlorobenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	600	720
1,3-Dichlorobenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	–
1,4-Dichlorobenzene	**6.43 / 6.70**	<1.0	<1.0	<1.0	<1.0	<1.0	75	1.82
1,3,5-Trimethylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	400
1,2,4-Trimethylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	**6.21**	<1.0	–	400
1,2,3-Trimethylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	–	–
1,1,2-Trichloroethane	<1.0 / <1.0	<1.0	<1.0	<1.0	**1.04**	<1.0		
Isopropylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	**7.87**	<1.0	–	–
n-Propylbenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	**1.15**	<1.0	–	–
1,2,4-Trichlorobenzene	**3.29** / **3.44**	<1.0	<1.0	<1.0	<1.0	<1.0	70	80
1,2,3-Trichlorobenzene	**1.58** / **1.66**	<1.0	<1.0	<1.0	<1.0	<1.0	–	–
Naphthalene	<5.0 / <5.0	<5.0	<5.0	<5.0	<5.0	<5.0	–	160
1,2-Dichloroethane	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5	0.481
Chloroform	<5.0 / <5.0	<5.0	<5.0	<5.0	<5.0	<5.0	80	80
Chlorobenzene	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	100	160
Carbon tetrachloride	<1.0 / <1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5	0.34

TABLE 2

GROUNDWATER ANALYTICAL RESULTS
ANNUAL SAMPLING EVENT – JANUARY 2016
Pioneer Builders Supply

Chemical	NMW-1A/ NMW-100[(a)]	NMW-8A	NMW-8A1	NMW-9A	NMW-10A	NMW-11A	MCLs[(b)]	Cleanup Levels[(c)]
Total Petroleum Hydrocarbons (mg/L)[(g)]								
Gasoline range hydrocarbons	<0.100/<0.100	<0.100	<0.100	<0.100	**0.239**	<0.100	–	0.8 (with benzene)/1 w/o
Diesel range hydrocarbons	**0.332/0.357**	<0.100	<0.100	**0.152**	**0.345**	<0.100	–	0.5
Oil range hydrocarbons	<0.250/<0.250	<0.250	<0.250	<0.250	<0.250	<0.250	–	0.5

Notes:

(a) Sample NMW-100 is a duplicate sample collected from well NMW-1A.
(b) Maximum contaminant levels (MCLs) provided in the Drinking Water Regulations under the Safe Drinking Act, as amended.
(c) Cleanup levels from Table 9-4 of the Record of Decision or the Model Toxics Control Act (MTCA) Method A/B groundwater cleanup levels based on MTCA Cleanup Levels and Risk Calculations (CLARC 3.1) updated November 2007.
(d) Groundwater samples were analyzed for VOCs by EPA Method 8260B. Only the results of historically detected analytes are summarized in this table.
(e) "<" Denotes that the analyte was not detected at the indicated laboratory reporting limit.
(f) "--" Denotes that a cleanup level has not been specified in the ROD, a MTCA Method A/B groundwater cleanup level is not available, or a MCL has not been established.
(g) Groundwater samples were analyzed for diesel (including oil) and gasoline range hydrocarbons using Washington State Department of Ecology Methods TPH-Dx and TPH-G, respectively.

mg/l = milligrams per liter
µg/L = micrograms per liter

Concentrations above the laboratory reporting limit are shown in bold

Attachment C

Annual Inspection Report

OPERATION AND MAINTENANCE INSPECTION REPORT FORM
SOUTH TACOMA FIELD SITE

Inspection Date: ***22 December 2015***

Personnel: ***Dean Malte***

ITEM	ITEMS TO MEASURE OR NOTE	OBSERVED CONDITIONS/MEASUREMENT	MAINTENANCE OR CORRECTIVE ACTION REQUIRED
1. Amsted Property Cover System			
Dead/damaged vegetation	If present, where?	Surface and vegetation cover on slope/swale on south side appear intact. Vegetation in encroaching on well locations, but they remain accessible.	Clear vegetation around well during next sampling event. No other corrective action required at this time.
Settlement/ponding	If present, where?	Minor ponding is present locally, but with recent precipitation.	No corrective action required at this time
Side slopes sliding	If present, where?	None noted during inspection	No corrective action required at this time
Seismic activity damage	If present, where?	None noted during inspection	No corrective action required at this time
2. Amsted Property Drainage System			
Swales	Range of depth of sediment accumulation. Area and depth of high sediment build-up.	No evident accumulation. Vegetation cover is generally intact and thick.	No corrective action required at this time, monitor.
3. Amsted Property Site Security			
Fences	Location of deterioration or vandalism	Fences are generally intact, but breaks in the fence fabric are present at approximately four locations along the western fenceline (adjacent to Madison St. extension).	Breaks in fence fabric will be repaired in early 2016.
Gates	Are gates operable?	All gates appear operable, although access from the east side not attempted. NE gate appears blocked with materials by Atkinson Construction, but does not affect access for sampling. Access to well MW-1A is difficult from the VMW-1 gate location.	A new access gate for MW-1A will be installed in the fence west of the well (adjacent to Madison St. extension) in early 2016. No other corrective action required at this time.
Locks	Missing or not functioning?	Chain and lock were present on VMW-1 access gate, but have been missing in the past.	Monitor chain and lock on VMW-1 gate, and lock on new gate for MW-1A. No other corrective action required at this time.
Signs	Signs destroyed or vandalized?	Signs were not located.	Consider replacement of signs.
4. BNR Dismantling Yard Cover System			
Settlement/ponding	If present, where?	No settlement or new rutting noted, but surface of containment area was wet with standing water at some locations (likely due to recent precipitation). Vegetation cover is generally in good condition and well established. Wells are accessible and intact, but access routes are becoming overgrown on slopes.	Clear brush as needed to access wells during next sampling event. No other corrective action required at this time, monitor vegetation growth and rutting on roads.
Fissures	If present, where?	None noted during inspection	No corrective action required at this time
Side slopes sliding	If present, where?	None noted during inspection	No corrective action required at this time
Seismic activity damage	If present, where?	None noted during inspection	No corrective action required at this time
5. BNR Dismantling Yard Drainage System			
Swales	Range of depth of sediment accumulation. Area and depth of high sediment buildup.	No significant sediment accumulation noted at lowest elevations of swales. Ponding is present locally around the perimeter of the containment area, but well monuments are not submerged.	No corrective action required at this time. Monitor.

Note: Photographs of site conditions included? No ☑ Yes ☐

OPERATION AND MAINTENANCE INSPECTION REPORT FORM
SOUTH TACOMA FIELD SITE

Inspection Date: ***22 December 2015***

Personnel: ***Dean Malte***

ITEM	ITEMS TO MEASURE OR NOTE	OBSERVED CONDITIONS/MEASUREMENT	MAINTENANCE OR CORRECTIVE ACTION REQUIRED
6. BNR Dismantling Yard Security			
Fences, gates, locks, and signs.	Damaged, missing, inoperable?	Fences and gates are currently secure and functional, but one of the support posts for the consolidation area gate is damaged so the gate is difficult to open (hinges are crooked). The fenceline that connects to the SE corner (the eastern boundary fence between the Site and the Sound Transit ROW) of the consolidation area is also intact, but access to well NMW-17A is blocked. The main access gate at Burlington way is secure and the fence is intact.	The consolidation area access gate will be repaired in early 2016. A small access gate for NMW-17A will be installed where the eastern fenceline connects to the consolidation area fence in early 2016 (the existing bollard across the roadway will not be removed). Monitor locks, chains, fence gates, for damage.
7. Other Cover Systems - BNSF Grids 452, 453, 460, 461, 493, 494, 500, 501, 520, 532, 533, 538, 550, 554, 586, 703, 767, 785, 791, 879, 1101, 1104, 13927. Other Cover Systems - BNSF Grids 452, 453, 460, 461, 493, 494, 500, 501, 520, 532, 533, 538, 550, 554, 586, 703, 767, 785, 791, 879, 1101, 1104, 1392			
Dead/damaged vegetation	If present, where?	Grid surfaces (except as noted below) are generally in similar condition to the previous inspection, and vegetation cover is generally adequate. Some new debris/garbage accumulation has occurred, particularly on the southwestern portion of the Site, but is localized. Roads and ground surfaces have been rutted and disturbed at locations throughout the site due to previous off-road vehicle and motorcycle use, but the occurrence of new rutting, etc. has been greatly reduced since the site perimeter fence was installed (2010).	Monitor vegetative growth and surface conditions in all grids. Monitor condition of perimeter fence and entry gates, primarily in the vicinity of Burlington Way and Madison Street..
Settlement / Ponding	If present, where?	Ponding is locally present throughout the Site due to recent precipitation, and is most notable near the Burlington Way access gate including grid 703, in the southwest portion of the site including grids 785 and 879, and around the northern consolidation area. The areas on and near grid 703, around the UST wells, and east of the consolidation area remain rutted from light rail construction activities (completed in 2010).	Monitor ponding and settlement conditions.
Fissures	If present, where?	None noted during inspection	No corrective action required at this time
Side slopes sliding / Erosion	If present, where?	None noted during inspection	No corrective action required at this time
Seismic activity damage	If present, where?	None noted during inspection.	No corrective action required at this time
8. Other Areas Drainage System - Grids 899, 900, 907, 908, 909, 911			
Settlement / Ponding	If present, where?	No settlement noted. Minor ponding noted locally. The perimeter of area is blocked with Ecology blocks and fences, but the fence fabric is damaged next to gate on Proctor Street. Wells are accessible and intact, although access to STM-3A and STM-4A is becoming overgrown.	Monitor vegetative growth and clear as needed for well access during next sampling event. Consider repair of fence fabric, although the area is not fully fenced.
Drainage at the southern section of the BNR Railyard	Range of depth of sediment accumulation. Area and depth of high sediment buildup.	No significant sediment accumulation noted.	Monitor vegetative growth. Repair if cap erosion is apparent.
	Ponding, blocked drainage	No settlement noted.	No corrective action required at this time
9. Groundwater Monitoring Wells			
Damage/Vandalism	Which wells?	Well STM-1A is damaged as per previous inspections and is unusable. Pioneer Builders Supply well NMW-8A is also damaged per previous inspections, with the stand-pipe monument tipped by 5-10 degrees and the northern protection post removed. Other wells are intact.	Wells NMW-8A and STM-1A will be abandoned and replaced with new wells in early 2016. The new wells (STM-1A1 and NMW-8A1) will be included in the next monitoring event. No other corrective action required at this time.
10. Grid Markers			
Damage/Vandalism	Which markers?	Markers were generally difficult to locate due to locally thick or matted vegetation, rutted surfaces (former Sound Transit work area primarily), and standing water. Markers 554, 586, 703, 767, 785, and 879 were not located. In addition, markers located east of the fenced containment area at the northern end of the site were not readily visible (except for grid 500).	Grid markers will be located and repaired or replaced as necessary in 2016. No other corrective action required at this time.
11. Other			
Site access		Access point on Burlington Way was secure. The Madison Street gate was secure at the time of inspection, but had been damaged recently. The Monroe street access gate and fence were intact. The perimeter fence appears to be generally intact.	Waste accumulation, abandoned vehicles, and off-road driving have been an ongoing issue at the site. The fence and gates installed in 2010 appear to have generally mitigated these problems, but accumulation of waste is still evident locally. Periodic inspection of site access conditions is recommended.

Attachment D

STF Monitoring Well Replacement Memo

4 April 2016

Memorandum

To: Nathan Graves

Cc: Steven Misner; Alexander Lesher

From: Dean Malte

Subject: STF Monitoring Well Replacement, January 2016
K/J 006015*05

This memo provides a summary of summary of monitoring well abandonment and installation activities performed at the BNSF South Tacoma Field (STF) Site in January 2016. Work included abandonment of one damaged (and non-functional) well (STM-1A) and installation of a replacement well (STM-1A1) in the southern portion of the Site, and installation of one new well (NMW-8A1) at the Pioneer Builders Supply (Pioneer) property. Well NMW-8A1 was installed to replace a damaged well located in the Sound Transit right-of-way east of Pioneer, but the original well (NMW-8A) has not yet been decommissioned pending review of analytical and water elevation data from the most recent (January 2016) sampling event.

Well decommissioning and installation work was performed as described in our *Monitoring Well Decommissioning and Replacement Work Plan* (Work Plan) dated 23 November 2015. All well decommissioning and installation work was performed by Cascade Drilling of Woodinville, WA, in accordance with the Washington State Department of Ecology (Ecology) *Minimum Standards for the Construction and Maintenance of Wells* (WAC 173-160), and observed by a Kennedy/Jenks Consultants Geologist.

Well STM-1A was abandoned on 4 January 2016 by over-drilling to remove the well casing and construction materials, and backfilling the boring with bentonite chips. The well was abandoned by over-drilling because the original driller's installation log was not available. The well monument posts and concrete were disposed as general refuse. Drill cuttings were contained in 55-gallon drums and moved to the containment area in the northern portion of the Site pending characterization and disposal.

A replacement well for STM-1A was installed on 4 January 2016 approximately five feet south of the original well location. The new well was designated STM-1A1 and was installed to a depth of 40 feet below ground surface (bgs) with using 2-inch diameter PVC well construction materials including 20 feet of 0.010-inch slotted well screen. Well STM-1A1 was completed with a steel stand-pipe monument with three protection posts.

Well NMW-8A1 was installed on the Pioneer property on 5 January 2016, approximately 15 feet southwest of NMW-8A. The new well was designated NMW-8A1 and was installed to a depth of 40 feet bgs with using 2-inch diameter PVC well construction materials including 20 feet of 0.010-inch slotted well screen. Well NMW-8A1 was completed with a steel surface-flush monument set in concrete. The new well was installed immediately west of the eastern Pioneer fence line, and is intended as a replacement for well NMW-8A which is located in the Sound Transit right-of-way east of Pioneer. NMW-8A was not decommissioned at the time because it

was to be included in the January 2016 groundwater monitoring event to confirm that similar conditions (contaminant concentrations and gradient position) exist at both locations.

We anticipate that MWW-8A will be abandoned, as described in the Work Plan, by late spring of 2016, following review of analytical and gradient data for the Pioneer wells.

Both new wells were developed by Cascade by alternately pumping and surging using a submersible pump. Well development water, decontamination water, and soil cuttings from well installation and development were contained in 55-gallon steel drums and moved to the containment area in the northern portion of the Site pending characterization and disposal.

The locations and elevations of the newly-installed wells were surveyed on 30 March 2016 by KPG of Tacoma, Washington. In addition, the locations and elevations of all Pioneer wells were also surveyed for verification, and to facilitate evaluation of the groundwater gradient for the Pioneer wells.

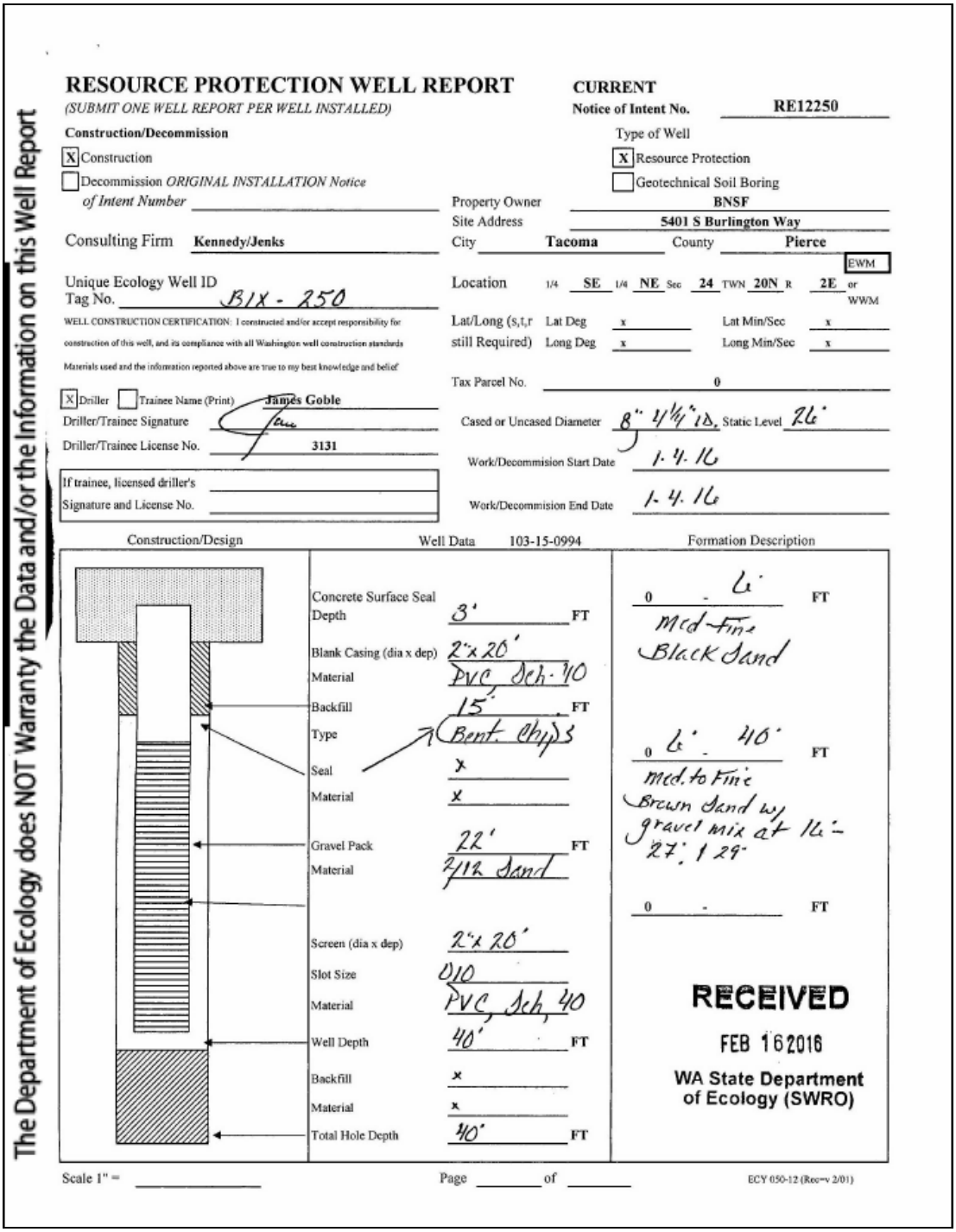
Photographs of the new wells and copies of the driller's *Resource Protection Well Report* for each new well are attached. The Ecology well tag number assigned to well STM-1A1 is BIX-250, and that assigned to well NMW-8A1 is BIX-151. Both logs were submitted to Ecology by Cascade Driller and are stamped as "Received" by Ecology on 16 February 2016.

Decommissioning of NMW-8A will be summarized in a subsequent Memorandum. Copies of surveyor's reports and/or maps for the new wells and existing Pioneer wells will also be provided in a subsequent Memorandum.

Attachments: Photos of STM-1A1 and NMW-8A1
Driller's Resource Protection Well Reports

New Well STM-1A1. View to the northwest.

New Well NMW-8A1 (surface monument in foreground) and existing well NMW-8A (yellow stand-pipe on opposite side of fence). View to the northwest.



RESOURCE PROTECTION WELL REPORT
(SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. RE12250

Construction/Decommission
[X] Construction
[ ] Decommission ORIGINAL INSTALLATION Notice of Intent Number

Type of Well
[X] Resource Protection
[ ] Geotechnical Soil Boring

Property Owner: BNSF
Site Address: 5401 S Burlington Way
Consulting Firm: Kennedy/Jenks
City: Tacoma County: Pierce

Unique Ecology Well ID Tag No. BIX - 250

Location 1/4 SE 1/4 NE Sec 24 TWN 20N R 2E EWM or WWM

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg x Lat Min/Sec x Long Deg x Long Min/Sec x

Tax Parcel No. 0

[X] Driller [ ] Trainee Name (Print) James Goble
Driller/Trainee Signature
Driller/Trainee License No. 3131

Cased or Uncased Diameter 8" 4 1/4" ID, Static Level 26'

Work/Decommision Start Date 1.4.16

If trainee, licensed driller's Signature and License No.

Work/Decommision End Date 1.4.16

Construction/Design — Well Data 103-15-0994 — Formation Description

Concrete Surface Seal Depth	3'	FT
Blank Casing (dia x dep)	2"x 20'	
Material	PVC, Sch. 40	
Backfill	15'	FT
Type	Bent. chips	
Seal	x	
Material	x	
Gravel Pack	22'	FT
Material	7/12 Sand	
Screen (dia x dep)	2"x 20'	
Slot Size	010	
Material	PVC, Sch, 40	
Well Depth	40'	FT
Backfill	x	
Material	x	
Total Hole Depth	40'	FT

Formation Description:
0 - 6' FT: Med-Fine Black Sand
0 - 6' 40' FT: med. to fine Brown Sand w/ gravel mix at 16'-27', 29'
0 - FT

RECEIVED
FEB 16 2016
WA State Department of Ecology (SWRO)

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

Scale 1" = Page of ECY 050-12 (Rev 2/01)

Resource Protection Well Report for STM-1A1

The Department of Ecology does NOT Warranty the Data and/or the Information on this Well Report

RESOURCE PROTECTION WELL REPORT
SUBMIT ONE WELL REPORT PER WELL INSTALLED)

CURRENT
Notice of Intent No. **RE12250**

Construction/Decommission
[X] Construction
[ ] Decommission *ORIGINAL INSTALLATION Notice of Intent Number* ______

Type of Well
[X] Resource Protection
[ ] Geotechnical Soil Boring

Property Owner **BNSF**
Site Address **5401 S Burlington Way**
City **Tacoma** County **Pierce**

Consulting Firm **Kennedy/Jenks**

Unique Ecology Well ID Tag No. BIX - 251

Location 1/4 **SE** 1/4 **NE** Sec **24** Twn **20N** R **2E** EWM or WWM

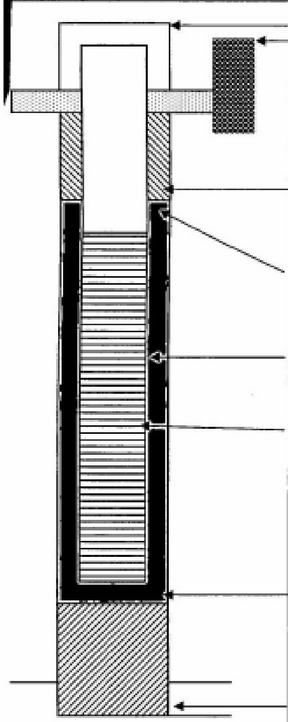
WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

Lat/Long (s,t,r still Required) Lat Deg ______ Lat Min/Sec ______
Long Deg ______ Long Min/Sec ______

Tax Parcel No. **0**

[X] Driller [ ] Trainee Name (Print) **James Goble**
Driller/Trainee Signature
Driller/Trainee License No. **3131**
If trainee, licensed drillers' Signature and License No.

Cased or Uncased Diameter 8" 4 1/4" - 12 Static Level 26'
Work/Decommission Start Date 1-5-16
Work/Decommission End Date 1-5-16



Construction/Design	Well Data 103-15-0994	Formation Description
Locking Cap		**0** - 6' FT
Protective Post		Fine to Med. Black Sand
Concrete Surface Seal Depth	3' FT	
Blank Casing (dia x dep)	2" x 20'	
Material	PVC (Sch. 40)	
Backfill	15' FT	
Type	Bent. Chips.	6' - 40' FT
Seal	x	Med to fine Brown Sand w/ Small gravel at 16 - 19'
Material	x	
Gravel Pack	22' FT	
Material	2/12 Sand	
		0 - FT
Screen (dia x dep)	2" x 20'	
Slot Size	.010	
Material	PVC, (Sch. 40)	
Well Depth	40' FT	
Backfill	x	
Material	x	
Total Hole Depth	40' FT	

RECEIVED
FEB 16 2016
WA State Department of Ecology (SWRO)

Scale 1" = ______ Page ______ of ______ ECY 050-12 (Rev 2/01)

Resource Protection Well Report for NMW-8A1